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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,706	11/08/2005	Patrick Beguery	266484US6XPCT	2039
22850	7590	08/19/2009	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			ESSEX, STEPHAN J	
			ART UNIT	PAPER NUMBER
			1795	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/528,706	Applicant(s) BEGUERY ET AL.	
	Examiner STEPHAN ESSEX	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-16 and 18-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-16 and 18-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The applicant's amendment filed on June 5, 2009 was received. Claim 17 was cancelled. Claims 10 and 18 were amended. New claims 19-27 were added.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

3. In view of Applicant's amendment of the drawings, the Examiner withdraws the previously set forth objection as detailed in the Office Action dated February 6, 2009.

Claim Rejections - 35 USC § 112

4. In view of Applicant's amendment of claim 10, the Examiner withdraws the previously set forth 35 U.S.C. 112, second paragraph rejection as detailed in the Office Action dated February 6, 2009.

Claim Rejections - 35 USC § 103

5. Applicant's arguments with respect to claims 10-18 have been considered but are moot in view of the new ground(s) of rejection.
6. Claim 10, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (U.S. Pub. No. 2001/0008718A1) in view of Jungreis (U.S. Pub. No.

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2003/0113595A1), Yakes et al. (hereinafter "Yakes") (U.S. Pat. No. 6,885,920) and Kato (U.S. Pub. No. 2002/0102447A1).

Regarding claim 10, Kobayashi teaches an electric energy recovery system in a motor vehicle (electric vehicle EV), containing a fuel cell (31) that feeds the electric motor (11) and electrical equipment and is supplied with fuel of hydrogen (hydrogen-rich gas), by a reformer (333), a fuel flow of which is controlled in accordance with electricity consumption of the electric motor, and which temporarily produces excess fuel when the consumption of the electric motor diminishes, and containing an energy storage (secondary battery 21), and a method comprising:

a) a balance during which a potential electric power that fuel cell is capable of instantaneously supplying is calculated in accordance with the fuel flow produced by the reformer (reformer 333) (see paragraphs 30, 40, figure 1).

c) determining electric energy storage capacity of energy storage which is released when the excess electric power is strictly positive (see paragraph 17).

d) a storing activated when the instantaneous storage capacity is higher than or equal to the excess electric power, during which the fuel cell is supplied by all of the excess fuel and during which the excess electric power is stored in the energy storage (see paragraph 61).

e) distributing the excess fuel, which is activated when the storage capacity is less than the excess electric power, during which the fuel cell is supplied with a portion of the excess fuel sufficient to reconstitute energy stocks of the energy storage (see paragraphs 62 and 63).

Kobayashi does not disclose the estimation of the electric power instantaneously consumed by the electric motor and by the equipment.

Kobayashi does not disclose calculating excess electric power which is the result of a difference between the potential electric power and a sum of the estimated electric powers consumed.

Kobayashi does not disclose energy storage in the form of a fluid container in which the energy is stored in a form of mechanical energy by a pump that modifies fluid pressure.

Kobayashi does not disclose that the pump drives at least one piece of the electrical equipment that is driven by the electric motor.

Jungreis teaches that is known in the art to calculate excess electric power as the difference between potential electric power and the sum of electric powers consumed (load 18) (see paragraph 16, figure 4). It is therefore implied there are means for estimating the sum of electric powers consumed.

Consequently, as shown by Jungreis, a person of ordinary skill in the art would have recognized that modifying the method of recovering electric energy of Kobayashi with the excess power calculation and power consumption estimation steps of Jungreis by incorporating these steps prior to determining the electric storage capacity of the energy storage would have provided the predictable result of determining the amount of excess electrical power. This modification would decrease processing time by way of fewer calculation steps.

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Yakes teaches that is known in the art to store excess electricity in the form of a fluid container in which the energy is stored in a form of mechanical energy by a pump that modifies fluid pressure (pressure accumulators) (see col. 1, lines 42-47, col. 52, lines 7-13). It would have been obvious to one having ordinary skill in the art to have modified the method of recovering electric energy of Kobayashi and Jungreis with energy storage method of Yakes so as to be able to supply power above and beyond that of the fuel cell.

Kato teaches a pump (pressure accumulator) that drives at least one piece of the electrical equipment (auxiliary apparatuses) (see paragraphs 58, 64 and 66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the pump in the method of recovering electric energy of Kobayashi, Jungreis and Yakes to drive at least one piece of electrical equipment as taught by Kato in order reduce the load on the fuel cell.

Regarding claim 13, Kobayashi teaches that the remaining portion of excess fuel is burned off (combustor 332) (see paragraph 34, figure 1 above).

Regarding claim 15, Kobayashi teaches the use of electric batteries (secondary battery 21) for energy storage (see paragraphs 14 and 26, figure 1 above).

7. Claims 11, 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, Jungreis Yakes and Kato as applied to claims 10, 13 and 15 above, and further in view of Seto (W.O. Pub. No. 94/21481).

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Regarding claim 11, Kobayashi and Jungreis do not disclose a method for recuperation braking activated when the electric power consumed by the motor is nil, the electric motor being capable of operating as an electric current generator, and during which the electric power capable of being produced by the electric motor is estimated and then added to the excess electric power.

Seto teaches a method for recuperation braking (regenerative brake means) activated when the electric power consumed by the motor is nil (when decelerating the vehicle), the electric motor being capable of operating as a generator, and during which the electric power capable of being produced by the electric motor (regenerative electrical energy) is estimated and then added to the excess electric power (excess regenerative electrical energy) (see col. 4, lines 21-37). It would have been obvious to one having ordinary skill in the art to have modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes and Kato with the recuperation braking method of Seto in order to recover energy to be used by other systems in an electric vehicle, such as an air conditioner.

Regarding claim 12, Kobayashi, Jungreis, Yakes, Kato and Seto do not disclose that the electric power produced by the electric motor is stored in the energy storage in priority over the excess power produced by the fuel cell.

When there is a motivation to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation, but of ordinary skill and common sense. See *KSR*

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Int'l v. Teleflex Inc., 127 Sup. Ct. 1727, 1742, 82 USPQ2d 1385, 1397 (2007) (see MPEP § 2143). Given two sources of electric power to be stored (electric power from the motor produced during recuperation braking, and excess electric power produced the fuel cell), and a limited storage capacity, one source of electric power must be stored in priority over the other. Therefore it would have been obvious to one of ordinary skill in the art to try storing the electric power produced by the electric motor in priority over the excess power produced by the fuel cell.

Regarding claim 16, Kobayashi, Jungreis, Yakes and Kato do not disclose energy storage in the form of a heat accumulator in which the excess electric power is stored in a form of heat energy by a compression cooling system.

Seto teaches energy storage in the form of a heat accumulator (heat accumulating means 30, 34) in which the excess electric power (excess regenerative power) is stored in a form of heat energy by a compression cooling system (compressor 2) (see abstract, col. 5, lines 55-58, col. 6, lines 1-8, figures 7 and 8). It would have been obvious to one having ordinary skill in the art to have modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes and Kato with the energy storage method of Seto in order to store excess energy for use in an electric vehicle's air conditioner.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, Jungreis, Yakes and Kato as applied to claims 10, 13 and 15 above, and further in view of Singh et al. (hereinafter "Singh") (U.S. Pat. No. 6,376,116).

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Regarding claim 14, Kobayashi, Jungreis, Yakes and Kato do not disclose that a remaining portion of the excess fuel is stored in a tank.

Singh teaches the storing of excess fuel in a tank (storage container 20) (see col. 2, lines 48-53, figure 1). It would have been obvious to one having ordinary skill in the art to have modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes and Kato with the storage tank of Singh in order to be able to supply the fuel cell with excess fuel when the reformer is unable to meet the load demand.

9. Claims 18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi and further in view of Seto, Yakes and Kato.

Regarding claim 18, Kobayashi teaches an electric energy recovery system in a motor vehicle (electric vehicle EV) driven by at least one electric motor, comprising a fuel cell (31) that feeds the electric motor (11) and electrical equipment and is supplied with fuel hydrogen (hydrogen-rich gas), by a reformer (333), a fuel flow of which is controlled in accordance with electricity consumption of the electric motor, and which temporarily produces excess fuel when the consumption of the electric motor diminishes, and containing an energy storage (secondary battery 21), the system regulating energy supplied by the fuel cell with aid of surplus reformat produced by the reformer (see paragraphs 14, 26, 30, 32, 61, 62, 63, figure 1 shown above).

Kobayashi does not disclose regulating the excess recovered energy produced by the motor.

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Kobayashi does not disclose energy storage in the form of a fluid container in which the energy is stored in a form of mechanical energy by a pump that modifies fluid pressure.

Kobayashi does not disclose that the pump drives at least one piece of the electrical equipment that is driven by the electric motor.

Seto teaches regulating the amount of excess recovered energy produced by the motor (see col. 4, lines 19-37). It would have been obvious to one having ordinary skill in the art to have modified the electric energy recovery system of Kobayashi with the energy regulation system of Seto in order to determine the amount of excess electric energy produced by the motor.

Yakes teaches that is known in the art to store excess electricity in the form of a fluid container in which the energy is stored in a form of mechanical energy by a pump that modifies fluid pressure (pressure accumulators) (see col. 1, lines 42-47, col. 52, lines 7-13). It would have been obvious to one having ordinary skill in the art to have modified the energy recovery system of Kobayashi and Jungreis with energy storage method of Yakes so as to be able to supply power above and beyond that of the fuel cell.

Kato teaches a pump (pressure accumulator) that drives at least one piece of the electrical equipment (auxiliary apparatuses) (see paragraphs 58, 64 and 66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the pump in the energy recovery system of Kobayashi, Jungreis and

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Yakes to drive at least one piece of electrical equipment as taught by Kato in order to reduce the load on the fuel cell.

Regarding claim 16, Kobayashi, Yakes and Kato do not disclose energy storage in the form of a heat accumulator in which the excess electric power is stored in a form of heat energy by a compression cooling system.

Seto teaches energy storage in the form of a heat accumulator (heat accumulating means 30, 34) in which the excess electric power (excess regenerative power) is stored in a form of heat energy by a compression cooling system (compressor 2) (see abstract, col. 5, lines 55-58, col. 6, lines 1-8, figures 7 and 8). It would have been obvious to one having ordinary skill in the art to have modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes and Kato with the energy storage method of Seto in order to store excess energy for use in an electric vehicle's air conditioner.

10. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, Jungreis, Yakes and Kato as applied to claims 10, 13 and 15 above, and further in view of Lutteke et al. (hereinafter "Lutteke") (U.S. Pat. No. 5,961,189).

Regarding claims 19 and 20, Kato teaches that a pump (pressure accumulator) may be used to drive at least one piece of electrical equipment (auxiliary apparatuses) (see paragraph 58).

Kato does not teach that the one piece of electrical equipment is either a braking assistance system or an assisted steering system. However, anti-lock brakes and

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power steering are well known in the art and one of ordinary skill in the art would include such equipment in the auxiliary apparatuses discussed in Kato (see paragraph 58).

Kobayashi, Jungreis, Yakes and Kato are silent to the pump being a vacuum pump or an electropump.

Lotteke teaches a vacuum pump and an electropump (pressure accumulator including either a vacuum pump or an excess pressure pump) (see col. 2, lines 48-60; col. 4, lines 30 and 40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes and Kato with the pumps of Lotteke because the pump of Kato and the pumps of Lotteke are functionally equivalent pressure accumulating means.

11. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, Jungreis, Yakes, Kato and Seto as applied to claim 16 above, and further in view of Dunn (U.S. Pub. No. 2003/0075643A1).

Regarding claim 21, Kobayashi, Jungreis, Yakes, Kato and Seto do not disclose that the storing includes adding excess electric power to the heat accumulator when recuperation braking is not activated.

Regarding claim 22, Kobayashi, Jungreis, Yakes, Kato and Seto do not disclose that the excess power stored in the heat accumulator is energy supplied only by the fuel cell.

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Dunn teaches that the storing (additional storage systems 511) includes adding excess electric power only from the fuel cell (excess energy from the fuel cell) to the heat accumulator (air conditioning unit 611) when recuperation braking is not activated (see paragraph 39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes, Kato and Seto with the fuel cell energy storage of Dunn in order to provide energy to the heat accumulator at times when the vehicle is accelerating.

12. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, Seto, Yakes and Kato as applied to claim 18 and 25 above, and further in view of Lotteke.

Regarding claims 23 and 24, Kato teaches that a pump (pressure accumulator) may be used to drive at least one piece of electrical equipment (auxiliary apparatuses) (see paragraph 58).

Kato does not teach that the one piece of electrical equipment is either a braking assistance system or an assisted steering system. However, anti-lock brakes and power steering are well known in the art and one of ordinary skill in the art would include such equipment in the auxiliary apparatuses discussed in Kato (see paragraph 58).

Kobayashi, Seto, Yakes and Kato are silent to the pump being a vacuum pump or an electropump.

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Lotteke teaches a vacuum pump and an electropump (pressure accumulator including either a vacuum pump or an excess pressure pump) (see col. 2, lines 48-60; col. 4, lines 30 and 40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modified the energy recovery system of Kobayashi, Seto, Yakes and Kato with the pumps of Lotteke because the pump of Kato and the pumps of Lotteke are functionally equivalent pressure accumulating means.

13. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi, Seto, Yakes and Kato as applied to claim 18 and 25 above, and further in view of Dunn.

Regarding claim 26, Kobayashi, Jungreis, Yakes, Kato and Seto do not disclose that the storing includes adding excess electric power to the heat accumulator when recuperation braking is not activated.

Regarding claim 27, Kobayashi, Jungreis, Yakes, Kato and Seto do not disclose that the excess power stored in the heat accumulator is energy supplied only by the fuel cell.

Dunn teaches that the storing (additional storage systems 511) includes adding excess electric power only from the fuel cell (excess energy from the fuel cell) to the heat accumulator (air conditioning unit 611) when recuperation braking is not activated (see paragraph 39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of recovering electric energy of Kobayashi, Jungreis, Yakes, Kato and Seto with the fuel cell energy storage of Dunn

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in order to provide energy to the heat accumulator at times when the vehicle is accelerating.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHAN ESSEX whose telephone number is (571) 270-7866. The examiner can normally be reached on Monday - Friday, 7:30-5:00 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SJE/

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795